AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A fuel monitoring system for use in a transportation system, the fuel monitoring system comprising:

a fuel leak detector comprising[[,]]

a colorimetric chemical monitor configured to change color in response to presence of a fuel, and

an optical reader comprising

a first optical detector configured to monitor a color of the colorimetric chemical monitor based on an intensity of first reflected light from the colorimetric chemical monitor, ~~the reflected light corresponding to two light paths;~~ and

a second optical detector configured to monitor a color of the colorimetric chemical monitor based on an intensity of second reflected light from the colorimetric chemical monitor; and

an alarm system in electronic communication with the fuel leak detector and configured to provide an alarm when a color of the colorimetric chemical monitor changes by a predetermined amount.

2. (Original) The system of claim 1 wherein the colorimetric chemical monitor comprises a porous substrate impregnated with mercurous chloride/methylcellulose reagent.

3. (Currently Amended) The system of claim 1 wherein ~~a portion of the porous substrate is~~ the colorimetric chemical monitor comprises a porous substrate impregnated with N-phenylanthranilic acid/titanium dioxide reagent.

4. (Currently Amended) The system of claim 3 wherein a ~~second~~ portion of the porous substrate is impregnated with mercurous chloride/methylcellulose reagent.

5. (Original) The system of claim 2 wherein the porous substrate comprises paper.

6. (Currently Amended) The system of claim 1 wherein the optical reader further comprises[[:]] a light source configured to illuminate a first surface of a porous substrate impregnated with a first reagent reactive with a hypergolic fuel component[[; and]], the light source further configured to illuminate a second surface of the porous substrate impregnated with a second reagent reactive with a hypergolic fuel component, wherein the first [[an]] optical detector is configured to receive light reflected [[by]] from the first surface of the porous substrate[[,]] and, in response, output a first voltage proportional to [[an]] the intensity of [[the]] first reflected light, and wherein the second optical detector is configured to receive light reflected from the second surface of the porous substrate and, in response, output a second voltage proportional to the intensity of second reflected light.

7. (Original) The system of claim 6 wherein the light source comprises a light emitting diode configured to emit light having a wavelength of about 455 nm.

8. (Currently Amended) The system of claim 6 wherein the optical reader further comprises:

a first comparator~~, the comparator~~ comprising[[:]]

a first input node configured to electrically communicate with the first optical detector,

a second input node configured to electrically communicate with a first reference voltage, the first reference voltage corresponding to a first voltage output by the first optical detector receiving light reflected from the first surface of the porous substrate in the absence of a hypergolic fuel component, and

[[an]] a first output node configured to output a first output voltage proportional to a difference between voltages at the first and second input nodes; and

a second comparator comprising

a third input node configured to electrically communicate with the second optical detector,

a fourth input node configured to electrically communicate with a second reference voltage, the second reference voltage corresponding to a second voltage output by the second optical detector receiving light reflected from the second surface of the porous substrate in the absence of a hypergolic fuel component, and

a second output node configured to output a second output voltage proportional to a difference between voltages at the third and fourth input nodes.

9. (Currently Amended) The system of claim 8 wherein the alarm is configured to be triggered when the first output voltage appearing on the first output node of the first comparator exceeds a first threshold value or when the second output voltage appearing on the second output node of the second comparator exceeds a second threshold value.

10. (Original) The system of claim 8 further comprising a beam splitter configured to cause light from the source to illuminate separate portions of the porous substrate.

11. (Currently Amended) A method for detecting leakage of a hypergolic fuel system, the method comprising:

monitoring an intensity of first reflected light from a colorimetric chemical monitor with a first optical detector of an optical reader~~;, the reflected light corresponding to two light paths; and~~

monitoring an intensity of second reflected light from the colorimetric chemical monitor with a second optical detector of the optical reader; and

determining a fuel leak when the intensity of first reflected light drops below a first predetermined threshold or when the intensity of second reflected light drops below a second predetermined threshold.

12. (Currently Amended) The method of claim 11 wherein ~~providing a~~ the colorimetric chemical monitor comprises a porous substrate impregnated ~~impregnating a porous substrate~~ with mercurous chloride/methylcellulose reagent.

13. (Currently Amended) The method of claim 11 wherein ~~providing a~~ the colorimetric chemical monitor comprises a porous substrate impregnated ~~impregnating a porous substrate~~ with N-phenylanthranilic acid/titanium dioxide reagent.

14. (Currently Amended) The method of claim 11 wherein ~~providing a~~ the colorimetric chemical monitor comprises a porous substrate impregnated with N-phenylanthranilic acid/titanium dioxide reagent, and wherein a portion of the porous substrate is impregnated with mercurous chloride/methylcellulose reagent.[[:]]

~~impregnating a first portion of a porous substrate with mercurous chloride/methylcellulose reagent; and~~

~~impregnating a second portion of the porous substrate with N-phenylanthranilic acid/titanium dioxide reagent.~~

15. (Currently Amended) The method of claim 14 wherein ~~impregnating a porous substrate comprises impregnating a porous substrate comprising~~ the porous substrate comprises paper.

16. (Currently Amended) The method of claim 11 ~~wherein providing an optical reader comprises~~ further comprising:

illuminating, with a light source, ~~providing a light source configured to illuminate~~ a first surface of a porous substrate impregnated with a first reagent reactive with a hypergolic fuel component; [[and]]

illuminating, with the light source, a second surface of the porous substrate impregnated with a second reagent reactive with a hypergolic fuel component;

receiving, with the first optical detector, ~~providing an optical detector configured to receive the~~ light reflected [[by]] from the first surface of the porous substrate; ~~and in response to~~

receiving, with the second optical detector, light reflected from the second surface of the porous substrate;

outputting, with the first optical detector, a first voltage proportional to the intensity of [[the]] first reflected light in response to the receiving, with the first optical detector; and

outputting, with the second optical detector, a second voltage proportional to the intensity of second reflected light in response to the receiving, with the second optical detector.

17. (Currently Amended) The method of claim 16 wherein ~~providing~~ the illuminating, with a light source, a first surface comprises ~~providing a light emitting diode configured to~~ emitting, with a light emitting diode, light having a wavelength of about 455 nm.

18. (Currently Amended) The method of claim 16 wherein determining a fuel leak ~~when the intensity of reflected light drops below a predetermined threshold~~ comprises:

providing a first reference voltage to a first input node of a first comparator, the first reference voltage corresponding to a first voltage output by the first optical detector receiving light reflected from the first surface of the porous substrate ~~resulting from the detector reflecting light~~ in the absence of [[the]] a hypergolic fuel component;

providing a second reference voltage to a third input node of a second comparator, the second reference voltage corresponding to a second voltage output by the second optical detector receiving light reflected from the second surface of the porous substrate in the absence of a hypergolic fuel component;

providing the [[output]] first voltage output by the first optical detector receiving light reflected from the first surface of the porous substrate from the first optical detector to a second input node of [[a]] the first comparator; [[and]]

providing the second voltage output by the second optical detector receiving light reflected from the second surface of the porous substrate from the second optical detector to a fourth input node of the second comparator;

measuring a first output voltage produced at [[an]] a first output node of the first comparator; and

measuring a second output voltage produced at a second output node of the second comparator.

19. (Original) The method of claim 11 further comprising generating an alarm when a fuel leak is determined.

20. (Withdrawn) A method of identifying a fuel leak comprising:

generating a voltage based upon comparison of a reference voltage with a voltage generated by a detector receiving light reflected from the surface of a substrate impregnated with a reagent reactive with a fuel component.